

Amendments to the Claims:

1. (currently amended) A traffic signal ball producing a light output, the traffic signal ball comprising:

a lamp including:

a plurality of LEDs,

an optical element arranged to disperse forwardly directed light produced by the LEDs, the optical element being partially reflective and partially transmissive, that portion of forwardly directed light passing through the optical element defining a direct light contribution to the light output, and

a threaded electrical connector; and

~~an optical system that receives light dispersed by the optical element and forms at least a portion of the received light into an outwardly directed light beam~~

a collimating reflector defining a reflector focus, the optical element being disposed at about the reflector focus such that the dispersed light is substantially collimated by the collimating reflector to define a reflected light contribution to the light output.

2. (currently amended) The traffic signal ball as set forth in claim 1, wherein the ~~optical system~~ collimating reflector includes:

a parabolic reflector arranged to receive and substantially collimate at least a portion of light dispersed by the optical element.

3. (currently amended) The traffic signal ball as set forth in ~~claim 2~~ claim 1, wherein ~~the optical system~~ further includes including:

a lens arranged to receive light collimated by the ~~parabolic~~ collimating reflector.

4. (Currently amended) The traffic signal ball as set forth in claim 1, ~~wherein the optical system includes~~ further including:

one of a filter and a tinted lens for spectrally filtering the light ~~beam~~ light output.

5. (currently amended) The traffic signal ball as set forth in claim 1, wherein the collimating reflector is optical system ~~includes: an optical system~~ adapted to operate with an incandescent light bulb.

6. (Currently Amended) A method for retro-fitting a traffic signal lamp with a threaded LED light source, wherein the traffic signal lamp has a threaded light bulb having an incandescent filament, a threaded socket for receiving and powering the light bulb, and optics configured to direct light produced by the ~~light bulb~~ incandescent filament in a generally forward direction, the method comprising ~~the steps of:~~

removing the threaded light bulb from the threaded socket; and

connecting the threaded LED light source into the threaded socket, wherein the threaded LED light source includes~~[[:]]~~ ~~a threaded electrical connector adapted for mechanical and electrical connection to the threaded socket,~~ at least one light emitting diode (LED), and an optical element that conditions light produced by the at least one LED to approximate light produced by the incandescent filament of the threaded light bulb.

~~a heat-sinking element for removing heat from the at least one LED;~~

~~electrical conditioning circuitry that receives electrical power from the threaded electrical connector and conditions the electrical power to operate the at least one LED; and~~

~~an optical element optically communicating with the at least one LED for distributing light produced by the at least one LED in conformance with the traffic signal lamp optics.~~

7. (Original) The method as set forth in claim 6, further including:

prior to removing the threaded light bulb, opening a cover of the traffic signal lamp;

and

after connecting the threaded LED light source, closing the cover of the traffic signal lamp.

8. (Original) The method as set forth in claim 6, further including:

applying electrical power to the threaded LED light source via the threaded socket to produce white light emission from the LED light source.

9. (Original) The method as set forth in claim 6, further including:

applying electrical power to the threaded LED light source via the threaded socket to produce one of red light emission, yellow light emission, and green light emission from the LED light source.

10-18. (Canceled)

19. (Currently amended) An LED-based light source comprising:

a threaded electrical connector arranged to receive electrical power;

power converting electronics that receive the electrical power and convert the electrical power to converted power;

a plurality of LEDs arranged to receive the converted power, the LEDs producing a generally forwardly directed first light beam responsive to receipt of the converted power;

a light dispersing element arranged at a focal region of a collimating reflector, the light dispersing element intercepting and transforming the first light beam into dispersed light emanating from the focal region; and

an optical system including the collimated reflector arranged to focus dispersed light emanating from the focal region into an output light beam having selected beam characteristics.

20. (Previously presented) The LED-based light source as set forth in claim 19, wherein the collimating reflector is arranged to substantially collimate dispersed light emanating from the focal region, and the optical system further includes a lens arranged to receive the substantially collimated light.

21. (Original) The LED-based light source as set forth in claim 20, wherein the threaded electrical connector, the plurality of LEDs, the light dispersing element, the collimating reflector, and the lens comprise a unitary threadably connectable light source.

22. (Original) The LED-based light source as set forth in claim 19, further including:

a heat sinking means for controlling heat generated by the light-emitting diode-based light source.

23. (Currently amended) A lamp for use in a light producing apparatus having a socket through which power is supplied to the lamp, said socket holding the lamp, and ~~an optical system including a collimating reflector and a lens which cooperate to direct~~ that directs light outwardly from the light producing apparatus, said lamp comprising:

a connector by which the lamp is installed in the socket;

a plurality of LEDs ~~electronically~~ electrically connected to the connector; and

a partially light-transmissive and partially light-reflective redirection optical element arranged at about a focal position of the collimating reflector when the lamp connector is installed in the socket, the redirection optical element (i) partially reflecting to redirect light emitted from the plurality of LEDs such that the redirected light is coupled into the optical system of the light producing apparatus into the collimating reflector and (ii) partially transmitting light emitted from the plurality of LEDs, wherein the partially reflected light and the partially transmitted light together approximate one of a point light source and a line light source.

24. (Original) The lamp as set forth in claim 23, wherein the connector is a threaded connector adapted to screw into the socket.

25. (previously presented) The lamp as set forth in claim 23, wherein the connector, the LEDs, and the redirection element are physically integrated into a single mechanically rigid apparatus.

26. (New) The traffic signal ball as set forth in claim 5, wherein a ratio of the light dispersed by the optical element to the direct light contribution is selected to correspond to light output of a filament of said incandescent light bulb.

27. (New) The traffic signal ball as set forth in claim 1, wherein a ratio of the light dispersed by the optical element to the direct light contribution is selected to approximate one of a point light source and a line light source.